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ABSTRACT

A criterion-referenced instrument, Inventory of Cognitive Skills and Visual-Motor Functioning, was devised to evaluate a prekindergarten program for economically disadvantaged 4-year-olds. The Inventory, administered to each child at the beginning and end of the preschool experience, provided specific information in: (1) knowledge of body parts, colors, shapes, and numbers; (2) information from pictures; (3) story comprehension; (4) picture comprehension; (5) concept knowledge; (6) following directions consisting of multiple parts; (7) copying shapes; (8) gross motor coordination; and (9) rating of responses during assessment. The assessment resulted in more precise classroom planning and better knowledge of the developmental level of the age group. An important part of criterion-referenced assessment is task analysis, or breaking down skills into their component parts. The Boehm Test of Basic Concepts illustrates the task analysis approach. Fifty concepts are tested to determine which present difficulty for individual pupils. With the test, teachers or specialists can identify individual strengths and limitations and group patterns, all of which can be used in classroom planning. Instructional procedures need to carry the task analysis further by tapping the many levels of concept learning and application, from concrete to abstract. (KM)

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APA Paper, 1972
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ASSESSING FOR TEACHING WITH YOUNG CHILDREN

As a psychologist working with a prekindergarten program you have been challenged with the problem of evaluating program effectiveness. You have to make the decision whether to follow the traditional route and carry out your evaluation by administering available standardized tests prior to and following the children's year in prekindergarten. From the improvement in test scores you would determine program effectiveness. Or, you might decide to take an alternate route and devise assessment materials tied to classroom goals. By generating specific information about each child's functioning, related to his or her school program, you would assist the teacher in curricular planning. This was the decision that recently challenged the writer and will now be discussed.

When charged with the task of evaluating whether or not a prekindgergarten program "worked", the writer made the decision not to use existing standardized tests as the general model for evaluation. Your immediate question might be, WHY NOT?

The prekindergarten program with which the writer was involved was geared to economically disadvantaged 4 year old children and was one of a number of such programs funded by New York State. One hundred and fifty children were enrolled in this particular program in 10 classes of 15 children each. Each class met for a half-day and was staffed by a teacher and a teacher aide.

Since we were charged with admitting the most needy children and since no follow-through program was then in action, the writer and staff <u>worked together</u> in formulating the role for assessment, determining that it:

(1) must be tied to program goals,

(2) provide the teacher with useful information for program planning, and

(3) must not slot children with a general score that could be subject to misinterpretation at a later date.

Discussions with staff; reading of available evaluation materials, stated curricular goals and guidelines; observation within the classrooms; and, consideration of kindergarten activity, all resulted in the development of an instrument entitled the Inventory of Cognitive Skills and Visual-Motor Functioning[1] which is available from the author.

This Inventory, individually administered by the teacher and/or aide to each child at the beginning and end of his or her pre-school experience, provided specific information in each of the following areas:

Knowledge of body parts
colors
shapes
numbers

Information from pictures

Story comprehension

Picture comprehension

Concept knowledge

Following directions consisting of multiple parts

Copying shapes

Gross Motor coordination

Rating of responses during assessment

[1]Detail of the development of the Inventory may be found in the article, Boehm, A.E., One Model for Developing a Prekindergarten Assessment Inventory, Exceptional Children, 1971, 523-527.

Where possible, areas of learning were broken down and evaluated at different levels. For example, a child might be able to identify and name a color (referred to as level 2), identify the color only with the teacher providing the color name (level 1), or neither of the above. The directions for color knowledge corresponded to these levels. Therefore at

(Visual 1)

Level 2 - identify and name - the direction would read, "WHAT COLOR IS THIS DRESS?" (teacher pointing to the red dress, etc.)

Level 1 - identify only - the direction would read, "SHOW ME THE DRESS THAT IS RED" (teacher providing the color name), and

Level N - can do neither - the child is unable to respond to either level 2 or 1.

The Inventory did not attempt to assess the child's knowledge of the entire spectrum of colors, but to sample the level at which he or she appeared to be functioning.

What resulted from the assessment was:

(Visual 2)

1. Teacher enthusiasm about the usefulness of assessment
2. Systematic observation on the part of the teacher of each child's functioning in the areas tapped by the Inventory at the beginning of the school year leading to more precise classroom planning
3. Each child serving as his own point of comparison when the end of year results were obtained
4. Some notion was gained of class patterns of general strengths and limitations, some of which were developmentally based. For example, most pre-school children would not be able to copy a triangle at the beginning of the school year, and only a few children would be able to accomplish this task by the end of the school year.

Before proceding any further, let us cycle back to some basic definitions which can provide a general framework for understanding the model employed. A basic distinction has been made by Glaser[2] between norm referenced and criterion

[2]Glaser, R., Instructional Technology and the measurement of learning outcomes. American Psychologist, 1963, 18, 519-521.

referenced testing. An example of a norm referenced test is the Peabody Picture Vocabulary Test[3] which tells us where a child stands in reference to a norming population of children who have taken that test. In contrast, on a criterion referenced test, attention is paid to how an individual functions on small slices of the total tasks, yielding pass-fail information at each level of behavior tapped. The Inventory described earlier would fall into the latter category.

In the final analysis, norm referenced and criterion referenced tests per se are not that different -- the difference depends upon their use. In using norm referenced procedures we can use the information gained from an item analysis; in using criterion referenced procedures we need to consider the influence of developmental expectations and sample variables on the test performance. However, the great advantage with criterion referenced instruments is the focus on the individual's functioning with each item type which is helpful for curriculum planning.[4]

What then might be the necessary considerations for developing new assessment materials? These include:

1. Being sufficiently specific about behaviors and goals so that it is possible to assess whether or not they are present or have been attained,

2. Being able to task analyze or break down skills into their component parts so that it is possible to develop items yielding pass-fail information about each component part,

3. Making careful analysis of components and recording information in a systematic manner, and

4. Demonstrating an understanding of child development and learning.

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[3]Dunn, L.D., The Peabody Picture Vocabulary Test, Nashville: American Guidance Service, 1959.

[4]Tyler and Gagne are other proponents of this approach. The growing recognition of the value of criterion referenced assessment has been detailed in Perspectives of Curriculum Evaluation, Monograph Series, Rand McNally, 1967, No. 2.

An important question facing individuals using such procedures is, WHEN IS OUR ANALYSIS SUFFICIENT?

The answer to this question is far from simple, since most learning areas can be analyzed into finer and finer levels of detail. One rule offered here is that the analysis must procede from the point where minimal competencies are tapped for each member of the population for whom the assessment procedure has been developed and procede in a stepwise progression until the end criterion behaviors have also been assessed.

An illustration of such a task analysis approach to assessment is the Boehm Test of Basic Concepts.[5] In developing this test the goal was to assess whether or not kindergarten through grade two children had a functional knowledge of basic relational concepts such as "same" and "different" or "in front of" and "behind" when these were presented in simple line drawings. Directions required only that the child mark the correct option. For example, item 1 (form A) reads:

(Visual 3) "LOOK AT THE PICTURES OF WRITING PAPER WITH STARS. MARK THE PAPER WITH THE STAR AT THE TOP."

A survey of curricular materials employed at the primary level was the basis of the task analysis and identification of basic relational concepts in frequent use, particularly in directions. Since the purpose of the test was to identify which basic concepts presented difficulty for individual pupils, 50 such concepts were selected for the final version of the test with additional concept terms listed in the manual for those desiring to use the test below the kindergarten level or with special populations.

Although a total score is yielded, the most important information is found through inspection of the class profile sheet. Here the teacher or specialist can identify individual strengths and limitations, as well as group patterns, both of which can lead to classroom planning.

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[5]Boehm, A.E., The Boehm Test of Basic Concepts. New York: The Psychological Corporation, 1971.

Since the test is appropriately used in grades k-2, items have been arranged roughly in ascending order of difficulty. Therefore, if a kindergarten child were to miss item 50 (form A),

"LOOK AT THE GROUPS OF STARS. MARK THE GROUP THAT HAS THE LEAST STARS"

we might not be as concerned as if a second grade child were to miss the same item.

Where we go in using the results of the test involves another task analysis of skills. This time each concept needs to be task analyzed into its many levels of usage from the concrete to the abstract. The test itself provides a survey of a large number of concepts; instructional procedures will need to tap the many levels of concept learning and application, a problem being worked on now in the development of a Resource Guide For Basic Concept Teaching.[6]

Given our very small knowledge of the processes underlying children's functioning and learning, assessment for teaching can only be viewed as an ongoing process in constant need of re-evaluation. However, the psychologist in the schools who has mastered the approach to assessment described, can be of increased value to the classroom teacher in planning appropriate learning sequences matched to the individual needs of the children involved.

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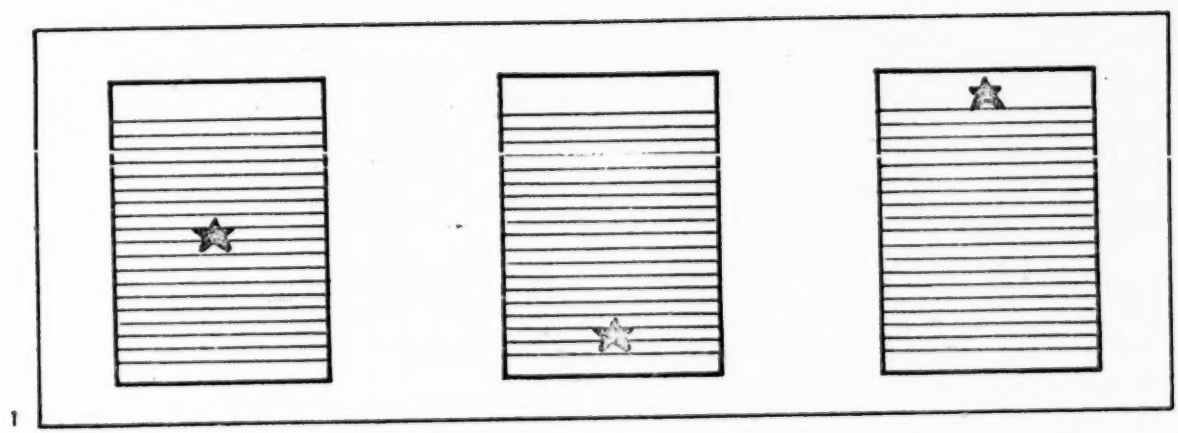
[6]Publication of the Resource Guide For Basic Concept Teaching is in process.

VISUAL 1

Visual 2

Inventory Item	Scoring	Children's Names	Total Across Row level 2	level 1	level N
1. Boy/Girl	2,1,N				
2. Body Parts: arm	2,1,N				
leg	2,1,N				
neck	2,1,N				
ETC.					

Visual 3



Item 1, Boehm Test of Basic Concepts